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MEMORANDUM

**TO:** Distribution

**FROM:** Ali Logmanni, Manager  
Engineering Section  
Office of Design and Construction

**DATE:** August 19, 2016

**SUBJECT:** Design Standards Supplement DST-16-02  
Section 8.4.4, Oil/Water Separators

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Effective immediately, the following modifications shall be made to the MAA Design Standards Manual, dated April 2016:

**Remove Section 8.4.4, *Oil/Water Separators* and replace with the attached document.**

Consultants listed herein are required to distribute this design standard to their respective subconsultants.

If you believe the attached design standards conflict with any other codes or regulations, or if you should have any questions regarding this matter, please contact the Manager of Engineering Section at 410-859-7768.

Attachment

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**MARYLAND DEPARTMENT OF TRANSPORTATION  
MARYLAND AVIATION ADMINISTRATION**

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2016 MAA Design Standards Manual  
Design Standards Supplement DST-16-02  
Section 8.4.4, Oil/Water Separators

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### **8.4.4 Oil/Water Separators**

Oil/Water Separators offer environmental protection from surface water pollution meeting the needs of a wide variety of run-off applications. Oil/water separators serving as secondary containment as defined by 40 CFR Part 112.8 must be constructed to contain 110% of the volume of the largest oil storage container. This often includes mobile fuelers and bulk fuel storage containers.

Construction and performance of the oil/water separators must be in accordance with UL SU-2215. Oil/water separators shall be listed to Underwriter's Laboratories UL SU-2215. Manufacturer must provide certification documentation detailing criteria under which the system was tested. UL SU-2215 label shall be prominently displayed on manway covers.

Capacities, dimensions, construction, and thickness of separators shall be in strict accordance with UL 58, double-walled construction with 360-degree steel secondary containment. The inner steel tank shall be completely contained within the outer tank, enclosing 100% of the tank volume. The tank must have a double steel shell with a space between the layers. The space between the inner and outer steel walls shall be monitored with an approved leak detection device.

Oil/water separators shall have the structural strength to withstand static and dynamic hydraulic loading while empty and during operating conditions. The oil/water separators dimensions and thickness shall be in strict compliance with Roark's Formulas for Stress and Strain as presented in UL 58. Calculations shall be submitted to project Design Engineer to document structural strength under specified overbearing or external pressure. These calculations shall be included in the submittal for the Oil/water separator. The separator shall be installed in accordance with manufacturer's recommendations. Oil/water separators installed below-ground shall be designed to withstand H-20 or aircraft rated loading depending on location.

Coalescer area calculations also must be provided during the submittal process and should illustrate specified performance under laminar flow conditions. Submitted calculations shall take into account the rate of flow, potential surge flow, influent concentration, particle characteristics (20-micron), fluid temperature, fluid specific gravity and pH.

Corrosion control systems for separators shall be in accordance with UL 1746 standard for external corrosion protection systems for steel underground tanks. Accepted exterior surfaces include: polyurethane (PUR), polyurea, or fiber-reinforced plastic (FRP) coated systems. Galvanic-type cathodic protection systems are not acceptable. Each separator STI corrosion control system shall include a 15 mil thick interior polyurethane coating and all interior seams shall be steel welded before sand blasting and interior coating.

Oil/water separators may provide treatment with flow-through or actuated inlet tanks. Oil/water separator systems shall be fabricated, inspected, and tested for leakage before shipment from the manufacturer as completely assembled units. The oil/water separator shall be tested in accordance with NFPA 30 Chapter 21.5.2 before being placed into service.

Separators shall never be intended for use with hazardous chemicals. Oil/water separators shall not be used with additional tanks for collection of oil effluent downstream of the unit discharge.

The source of the influent to the separator shall be gravity flow from storm water runoff, hydrocarbon spills, and/or cleaning/maintenance operations.

Oil/water separator local alarm control panel shall consist of audible and visual alarms generated. Alarms shall consist of "high" oil level, "high, high" oil level, and "leak" detection. Control panel shall consist of NEMA 4 enclosure and level sensors shall be intrinsically safe. Liquid level sensing device shall comply with the Standard for Liquid Level Indicating Gauges for Oil Burner Fuels, UL 180, or Control Equipment for use with Flammable Liquid Dispensing Devices, UL 1238.

Separators shall be furnished with flanged inlet and outlet pipe connections

Separators shall utilize necessary appurtenances, including, but not limited to, liquid level devices, overpressure devices, venting, heaters, pumps, monitors, shutoff valves, control panels, or other individual mechanical or electrical components.

Oil/water separators shall meet the following requirements:

- Must comply with Standard for External Corrosion Protection Systems for Steel Underground Storage Tanks—UL 1746
- Normal Venting for Underground Storage Tanks—National Fire Protection Association NFPA 30, 2012. Flammable and Combustible Liquids Code.
- Erosion and Sediment Control—COMAR 26.17
- Gaskets and Seals—UL 157
- Underwriter's Laboratories UL SU-2215

Design must maintain positive drainage through the unit. Piping utilized for drainage from the unit shall be sized based on maximum discharge flowrates from the unit, pipe capacity, and necessary pipe strength based on depth of below ground pipe placement. Piping shall be installed with all necessary appurtenances, including seals at piping connections to prevent contamination by unit, cleanouts to allow access to entire length of installed piping, and necessary valves. Oil/water separator inlet and outlet piping shall be installed with a minimum slope of 1 percent, and to discharge non-erosively.

Oil water separator must be properly vented to prevent flow siphoning through the tank. Comply with oil/water separator manufacturer recommendations for vent pipe size and locations.

Oil/water separator must contain a minimum of two manways. One manway shall be directly above coalescers (either parallel plates or coalescer balls acceptable) to provide easy access during maintenance. The second manway shall be directly above either a final polishing coalescer, if applicable, or the sludge chamber. Each manway dimensions shall facilitate easy removal of either device during

maintenance. No manway shall be less than ID 30 inches in size. The manway covering must be in accordance with Chapter 7.2.2 Manhole/Handhole Covers/LIDS.

Each separator shall be provided with a minimum warranty of one year material and workmanship against structural failure following placement into service.

Separators must be designed to remove all free oil droplets equal or greater than 20 microns. In addition the effluent quality must meet a discharge limit of 15mg/L oil and grease.

Selected oil/water separator manufacturer shall have at least 5 years of experience in manufacturing similar units for comparable applications.

If there is a conflict between the MAA design standards and federal, state, or local code, the latest code or policy will govern.